

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended) A device for realizing beam-forming in CDMA system, said device comprising:

~~said device comprising~~ in a forward signal flow, at least a base band system, an optical transceiver system, ~~a-transceiver systems~~, an analog fixed beam-forming network, a power amplifier, a transmission filter ~~at of~~ a radio frequency front end, and an antenna system; and

~~said device comprising~~ in a reverse signal flow, at least the antenna system, a reception filter ~~at of~~ a radio frequency front end, a low noise amplifier, the analog fixed beam-forming network, the transceiver systems, the optical transceiver system and the base band system;

wherein, said base band system ~~including comprises~~ at least one base band chip, and the at least one base band chip ~~having have~~ a plurality of sectors;

wherein, the optical transceiver system ~~comprising comprises~~ ~~an optical fiber and an first~~ optical interface board close to the base band system, ~~and an second~~ optical interface board close to the transceiver systems, and an optical fiber between the first optical interface board and the second optical interface board, the first and second optical interface board being used to interconvert electronic signals and optical signals input; and the optical transceiver system is configured to enabling enable the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and to enable a radio frequency part close to the antenna, ~~thereby so as to reducing reduce~~ power loss;

~~said optical interface board being used to interconvert electronic signals and optical signals input;~~

wherein, the base band system is configured to, when transmitting forward signals on a common channel, make different beams ~~are be~~ reflected to the sectors of the at least one base band chip to have different time delays ~~in the base band system~~, so that ~~they the~~ different beams are not coherent with one another even when the different beams carry same information.

2. (Currently amended) The device for realizing beam-forming in CDMA system of claim 1, wherein:

said base band system ~~includes~~ comprises at least one base band logic.

3. (Currently amended) The device for realizing beam-forming in CDMA system of claim 1, in said device comprising the analog fixed beam-forming network, when transmitting forward signals, wherein:

~~in a device including the analog fixed beam-forming network, when transmitting forward signals, in order to avoid mutual counteraction between multiple beams forming a common channel, first, the base band system is configured to make different beams are made to have different time delays in the base band system;~~

~~then, the optical fiber is configured to make after the signals to pass through the optical fiber;~~

~~the transceiver systems are configured to make the different beams to pass different transceiver systems respectively;~~

~~the analog fixed beam-forming network is configured to, after the different beams passing their corresponding transceiver systems, make the different beams pass through the analog fixed beam-forming network;~~ and

~~the antenna system are is configured to amplifiedamplify, filtered-, and transmitted the different beams through antennas to forme beams with different directions in space, in order to avoid mutual counteraction among multiple beams forming a common channel.~~

4. (Currently amended) The device for realizing beam-forming in CDMA system of claim 1, wherein:

said device ~~including~~ comprising the analog fixed beam-forming network ~~needs is~~ configured to correct the analog fixed beam-forming network, the power amplifier, the transmission and reception filter of the radio frequency front end, the low noise amplifier, a feedback line and the antenna system, and radio frequency cables therebetween.

5. (Currently amended) The device for realizing beam-forming in CDMA system of claim 1, wherein:

said analog fixed beam-forming network ~~may be~~ is Butler matrix, or Blass matrix, or electromagnetic lens of the Lunegberg or Rotman type.

6. (Currently amended) The device for realizing beam-forming in CDMA system of claim 1, wherein:

said device further comprises: the base band system, the optical transceiver system, the transceiver systems, an analog fixed beam-forming network formed by batter matrix, radio frequency cables between the transceiver systems and the analog fixed beam-forming network, radio frequency links including the power amplifier, the transmission filter and the reception filter of the radio frequency front end, the low noise amplifier and a feedback line, and the antenna system;

said optical transceiver system, transceiver systems, analog fixed beam-forming network, antenna system and radio frequency links therebetween ~~can~~ are configured to be placed on a tower or a holding pole, so as to make the radio frequency cables therebetween as short as possible and easy to correct, ~~therefore loss genetated on outputting power in the power amplifier is reduced, and an area covered is increased.~~

outputs of each sector of said base band system is configured to pass the transceiver systems respectively, then pass the analog fixed beam-forming network, and, thereafter, reflect to the fixed beams respectively; and

beams formed in said common channel ~~is~~ are configured to be equivalent to beams added by the fixed beams.

7. (Currently amended) A device for realizing beam-forming in CDMA system, said device comprising:

~~said device comprising~~ in a forward signal flow, at least a base band system, a digital fixed beam-forming network, an optical transceiver system, ~~a-transceiver systems~~, a power amplifier, a transmission filter of a radio frequency front end and an antenna system;

~~said device comprising~~ in a reverse signal flow, at least the antenna system, a reception filter of a radio frequency front end, a low noise amplifier, the transceiver systems, the optical transceiver system, the digital fixed beam-forming network, and the base band system;

wherein, said base band system ~~including~~ comprises at least one base band chip, and the at least one base band chip ~~having~~ have a plurality of sectors;

wherein, said optical transceiver system ~~comprising~~ comprises ~~an optical fiber, an first~~ optical interface board close to the base band system, ~~and an second~~ optical interface board close to the transceiver systems, and an optical fiber between the first optical interface board and the second optical interface board, the first and second optical interface board being used to interconvert electronic signals and optical signals input; and the optical transceiver system is configured to enabling-enable the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and to enable a radio frequency part close to the antenna, ~~thereby so as to reducing-reduce~~ the power loss; and

~~said optical interface board being used to interconvert electronic signals and optical signals input;~~

wherein, the base band system is configured to, when transmitting forward signals on a common channel, make different beams ~~are~~ be reflected to the sectors of the at least one base band chip to have different time delays ~~in the base band system~~, so that ~~they~~ the different beams are not coherent with one another even when the different beams carry same information.

8. (Currently amended) The device for realizing beam-forming in CDMA system of claim 7, wherein:

said base band system ~~includes~~ comprises at least one base band logic.

9. (Currently amended) The device for realizing beam-forming in CDMA system of claim 7, in said device comprising the digital fixed beam-forming network, when transmitting forward signals, wherein:

~~in a device including the digital fixed beam-forming network, when transmitting forward signals, in order to avoid mutual counteraction among multiple beams forming a common channel, first, the base band system is configured to make~~ different beams are made to have different time delays ~~in the base band system;~~

~~then, the digital fixed beam-forming network is configured to make the different beams pass through the digital fixed beam-forming network to make~~ the different beams themselves have different space directions;

the transceiver systems are configured to, after passing through the optical fiber, make the different beams to pass different transceiver systems;

the antenna system is configured to, after the different beams pass their corresponding transceiver systems, they are amplified amplify, filtered, and transmitted the different beams through antennas to form beams with different directions in space, in order to avoid mutual counteraction among multiple beams forming a common channel.

10. (Currently amended) The device for realizing beam-forming in CDMA system of claim 7, wherein:

said device ~~including comprising~~ the digital fixed beam-forming network ~~needs is~~ configured to correct the transceiver systems, the power amplifier, the transmission and reception filters of the radio frequency front end, the low noise amplifier, a feedback line and the antenna system, and the radio frequency cables therebetween.

11. (Currently amended) The device for realizing beam-forming in CDMA system of claim 7, wherein:

said device further comprises: the base band system, the digital fixed beam-forming network, ~~an~~the optical transceiver system, the transceiver systems, radio frequency links including the power amplifier, the transmission and reception filters of the radio frequency front end, the low noise amplifier, and a feedback line, radio frequency cables between the transceiver systems and the radio frequency links, and ~~an~~the antenna system;

said device ~~needs~~is configured to correct the transceiver systems, the radio frequency links including the power amplifier, the transmission filter and reception filter of the radio frequency front end, the low noise amplifier and the feedback line~~etc.~~, the radio frequency cables between the transceiver systems and the radio frequency links, the antenna system and the radio frequency cables between the above systems;

outputs of said base band system are configured to ~~reflected~~ to the fixed beams respectively after passing the digital fixed beam-forming network; and

beams formed in a said common channel are configured to be equivalent to beams added by the fixed beams.

12. (Currently amended) A method for realizing beam-forming in CDMA system, at least comprising the following steps of:

step one: in a base band, reflecting base band signals of each fixed beam to sectors of base band chips;

step two: making the base band signals of the fixed beams reflected to corresponding sectors of the base band chips have different time delays when transmitting forward signals on a common channel;

wherein, said step two is:

setting a quantity of the time delays, such that output signals of each sector of the base band chips do not correlate with one another when transmitting common channel information; and

when transmitting the common channel information, making beams at ends of antennas have different time delays to make the formed common channel beams not correlate with one another, so as to avoid beams correlating with and counteracting one another in some area when fixed beams compose the beams covering a whole sector.

13. (Currently amended) The method for realizing beam-forming in CDMA system of claim 12, wherein, in said step one:

reflecting the base band signals of each fixed beam ~~is reflected to~~ different sectors of the base band chips; or

reflecting the base band signals of each fixed beam ~~is reflected to~~ same sectors of the different base band chips.

14. (Currently amended) The method for realizing beam-forming in CDMA system of claim 12, wherein, in said step one:

when transmitting in a traffic channel of a user, ~~the transmitting can be made only~~ within certain fixed beam where the user locates, that is, reflecting the base band signals of the fixed beams for this user ~~are reflected to~~ one certain corresponding sector of the base band chips-;

if the user locates among several beams, selecting one or several narrow beams ~~can be selected~~ according to strengths of several user signals of beams received to transmit service data of the user, that is, reflecting the base band signals of the user ~~is reflected to~~ one or several corresponding sectors of the base band chips.

Application No. 10/580,165  
Amdt. dated 19 October 2011  
Reply to Office Action of 19 August 2011

15. (Currently amended) The method for realizing beam-forming in CDMA system of claim 12, wherein, in said step one:

when transmitting in a common channel of each user, transmitting information of this channel ~~should be transmitted~~ in every fixed beam, that is, reflecting the information of the common channel ~~is reflected~~ to every sector of the base band chips.

16. (Currently amended) The method for realizing beam-forming in CDMA system of claim 12, wherein, ~~said step two:~~

~~can be accomplished~~ accomplishing the process of said step two in the base band chips; or  
~~can also be accomplished~~ accomplishing the process of said step two by digital logic components after the base band chips, that is, ~~accomplished~~ accomplishing in the base band.

17. (Cancelled)

18. (Cancelled)



19. (Currently amended) The device for realizing beam-forming in CDMA system of claim 2, in said device comprising the analog fixed beam-forming network, when transmitting forward signals, wherein:

~~in a device including the analog fixed beam-forming network, when transmitting forward signals, in order to avoid mutual counteraction between multiple beams forming a common channel, first, the base band system is configured to make different beams to have different time delays in the base band system, so that they the different beams do not correlate with one another even when the different beams carry same information;~~

~~then, the optical fiber is configured to make after the signals to pass through the optical fiber;~~

~~the transceiver systems are configured to make the different beams to pass different transceiver systems respectively;~~

~~the analog fixed beam-forming network is configured to, after the different beams passing their corresponding transceiver systems, make the different beams pass through the analog fixed beam-forming network;~~ and

~~the antenna system is configured to are amplified amplify, filtered , and transmitted the different beams through antennas to forme beams with different directions in space, in order to avoid mutual counteraction among multiple beams forming a common channel.~~

20. (Currently amended) The device for realizing beam-forming in CDMA system of claim 2, wherein:

said device ~~including comprising~~ the analog fixed beam-forming network ~~needs is~~ configured to correct the analog fixed beam-forming network, the power amplifier, the transmission and reception filter of the radio frequency front end, the low noise amplifier, a feedback line and the antenna system, and radio frequency cables therebetween.

21. (Currently amended) The device for realizing beam-forming in CDMA system of claim 2, wherein:

said analog fixed beam-forming network ~~may be is~~ Butler matrix, or Blass matrix, or electromagnetic lens of the Lunegberg or Rotman type.

22. (Currently amended) The device for realizing beam-forming in CDMA system of claim 2, wherein:

said device further comprises: the base band system, the optical transceiver system, the transceiver system, an analog fixed beam-forming network formed by batter matrix, radio frequency cables between the transceiver systems and the analog fixed beam-forming network, radio frequency links including the power amplifier, the transmission filter and the reception filter of the radio frequency front end, the low noise amplifier and a feedback line, and the antenna system;

said optical transceiver system, transceiver systems, analog fixed beam-forming network, antenna system and radio frequency links therebetween ~~can~~ are configured to be placed on a tower or a holding pole, so as to make the radio frequency cables therebetween as short as possible ~~and easy to correct, therefore loss genetated on outputting power in the power amplifier is reduced, and an area covered is increased.~~

outputs of each sector of said base band system is configured to pass the transceiver systems respectively, then pass the analog fixed beam-forming network, and; thereafter; reflect to the fixed beams respectively; and

beams formed in said common channel ~~is~~ are configured to be equivalent to beams added by the fixed beams.

23. (Currently amended) The device for realizing beam-forming in CDMA system of claim 8, in said device comprising the digital fixed beam-forming network, when transmitting forward signals, wherein:

~~in a device including the digital fixed beam-forming network, when transmitting forward signals, in order to avoid mutual counteraction among multiple beams forming a common channel, first, the base band system is configured to make different beams to have different time delays in the base band system, therefore, so that they the different beams do not correlate with one another even when the different beams carry same information;~~

~~then, the digital fixed beam-forming network is configured to make the different beams pass through the digital fixed beam-forming network to make the different beams themselves have different space directions;~~

~~the transceiver systems are configured to, after passing through the optical fiber, make the different beams to pass different transceiver systems;~~

~~the antenna system is configured to, after the different beams pass their corresponding transceiver systems, they are amplifiedamplify, filtered , and transmitted the different beams through antennas to form beams with different directions in space, in order to avoid mutual counteraction among multiple beams forming a common channel.~~

24. (Currently amended) The device for realizing beam-forming in CDMA system of claim 8, wherein:

said device ~~including comprising~~ the digital fixed beam-forming network ~~needs is~~ configured to correct the transceiver systems, the power amplifier, the transmission and reception filters of the radio frequency front end, the low noise amplifier, a feedback line and the antenna system, and the radio frequency cables therebetween.

25. (Currently amended) The device for realizing beam-forming in CDMA system of claim 8, wherein:

said device further comprises: the base band system, the digital fixed beam-forming network, ~~an~~the optical transceiver system, the transceiver systems, radio frequency links including the power amplifier, the transmission and reception filters of the radio frequency front end, the low noise amplifier, and a feedback line, radio frequency cables between the transceiver systems and the radio frequency links, and ~~an~~the antenna system;

said device ~~needs is configured~~ to correct the transceiver systems, the radio frequency links including the power amplifier, the transmission filter and reception filter of the radio frequency front end, the low noise amplifier and the feedback line-etc., the radio frequency cables between the transceiver systems and the radio frequency links, the antenna system and the radio frequency cables between the above systems;

outputs of said base band system are configured to reflected to the fixed beams respectively after passing the digital fixed beam-forming network; and

beams formed in a ~~said~~ common channel are configured to be equivalent to beams added by the fixed beams.

26. (Cancelled)